

## Appendix B

### Notation

SYMBOL	DEFINITION	UNITS
A	Constant in longshore current profile	--
a	Numerical constant in JONSWAP spectrum	--
a	Slope of line for extreme value fitting	1/m
a	Constant in longshore current	--
$a_c$	Amplitude of the crest	m
$a_n$	Amplitude of wave n	m
$a_t$	Amplitude of the trough	m
$B_1$	Constant in longshore current profile	--
$B_2$	Constant in longshore current profile	--
b	Intercept for extreme value fitting	--
C	Wave celerity	m/sec
$C_g$	Group velocity	m/sec
$C_{gb}$	Group velocity at breaker line	m/sec
$C_{go}$	Deep water group velocity	m/sec
c	Critical slope coefficient	--
D	Duration of wave record	sec
D	Wave travel distance	km
D	Sediment grain size	mm
$D_B$	Elevation of berm	m
$D_C$	Closure depth	m
$D_{50}$	Median grain size	mm
d	Water depth	m
$d_b$	Breaker depth	m
E	Wave energy density	N/m
$E_b$	Wave energy density at breakerline	N/m
F	Fetch length	km
$F_{min}$	Minimum fetch length	km
f	Wave frequency	hz
$f_f$	Frictional drag coefficient	--
$f_n$	Frequency of wave n	hz
$f_p$	Peak frequency	hz
$f_w$	Drag coefficient for oscillatory wave motions	--
G	Spreading function	--
$G_o$	Beach face stability parameter	--
g	Gravitational acceleration	m/sec <sup>2</sup>
H	Wave height	m
$\bar{H}$	Average wave height	m
$H_b$	Breaking wave height	m
$H_{br}$	Root mean square breaking wave height	m
$H_{bs}$	Significant breaking wave height	m
$H_{max}$	Maximum wave height	m
$H_{m0}$	Energy based significant wave height	m
$H_{rms}$	Root mean square wave height	m
$H_s$	Significant wave height	m
$H_0$	Deep water wave height	m
$H'_0$	Unrefracted deep water wave height	m
$H_i$	Mean wave height	m
$H_{1/3}$	Average highest of highest 1/3 waves	m
$H_{1/10}$	Average highest of highest 1/10 waves	m
$H_{1/100}$	Average highest of highest 1/00 waves	m
h	Dummy variable of integration	m
$I_1$	Immersed weight longshore transport rate	N/sec

SYMBOL	DEFINITION	UNITS
i	Immersed weight transport rate per unit cross-shore distance	N/m-sec
K	Longshore sediment transport coefficient	--
$K'$	Longshore sediment transport coefficient	--
$K_D$	Diffraction coefficient	--
$K_F$	Dissipation coefficient	--
$K_R$	Refraction coefficient	--
$K_S$	Shoaling coefficient	--
k	Wave number ( $2\pi/L$ )	1/m
$k_l$	Empirical longshore current coefficient	--
$k_1$	Longshore current coefficient	--
L	Prescribed time period for the encounter probability	yr
L	Wavelength	m
$L_f$	Length of fill	m
$L_g$	Length of groin	m
$L_p$	Length of peak period wave	m
$L_0$	Deep water wavelength	m
m	Rank of a wave height	
$m$	Beach slope	--
N	Mixing strength coefficient	--
N	Number of waves	--
n	Sediment porosity	--
P	Cumulative probability distribution function	--
P	Lateral mixing strength parameter	--
$P_e$	Encounter probability	--
$P_1$	Longshore component of wave energy flux	N/sec
p	Pressure	N/m <sup>2</sup>
$p_g$	Pressure gradient across fetch	°Lat
$P_1$	Constant in longshore current profile	--
$Q_G$	Gross volumetric longshore transport rate	m <sup>3</sup> /yr
$Q_L$	Left (facing the shoreline) volumetric longshore transport rate	m <sup>3</sup> /yr
$Q_1$	Volumetric longshore transport rate	m <sup>3</sup> /yr
$Q_N$	Net volumetric longshore transport rate	m <sup>3</sup> /yr
$Q_p$	Spectral peakedness parameter	--
$Q_o$	Volumetric longshore transport for $\alpha_b = 45^\circ$	m <sup>3</sup> /sec
$Q_R$	Right (facing the shoreline) volumetric longshore transport rate	m <sup>3</sup> /yr
q	Sediment sources and sinks	m <sup>3</sup> /m-sec
R	Wave runup	m
$R_G$	Elevation correction for geostrophic wind speed	--
$R_T$	Temperature correction	--
r	Global shoreline coordinate	m
r	Time interval associated with each data point	
$S_{\eta}$	Wave energy density spectrum	m <sup>2</sup> -sec
s	Global shoreline coordinate	m
s	Spreading function parameter	--
s	Isobar spacing on synoptic chart	mb

SYMBOL	DEFINITION	UNITS
$T$	Wave period	sec
$T_a$	Air temperature	°C
$T_D$	Decayed wave period	sec
$T_F$	Wave period at fetch	sec
$T_p$	Peak spectral period	sec
$T_r$	Return period	yr
$T_s$	Significant wave period	sec
$T_s$	Sea water temperature	°C
$t$	Time	sec
$t$	Storm duration	hr
$U$	Wind speed	m/sec
$U_A$	Wind stress factor	m/sec
$U_g$	Geostrophic wind speed	m/sec
$u$	Horizontal water particle velocity	m/sec
$u_m$	Maximum horizontal particle velocity	m/sec
$V$	Dimensionless longshore current velocity ( $=v/v_o$ )	--
$v$	Longshore current velocity	m/sec
$V_l$	Midsurf longshore current velocity	m/sec
$v_o$	No-mixing longshore current velocity at the breakerline	m/sec
$w$	Vertical water particle velocity	m/sec
$w$	Fetch width	°Lat
$w_s$	Sediment settling velocity	m/sec
$X$	Dimensionless offshore distance ( $= x/x_b$ )	--
$x$	Abscissa scale for extreme value fitting	m
$x$	Offshore distance measured from the shoreline	m
$x_b$	Offshore distance to breaker line	m
$y$	Ordinate scale for extreme value fitting	--
$y$	Alongshore coordinate	m
$z$	Vertical coordinate	m
$\alpha$	JONSWAP spectrum coefficient	--
$\alpha$	Cumulative probability parameter	--
$\alpha_b$	Angle between the breaking wave crest and the shoreline	rad
$\alpha_0$	Angle between deep water wave angle	rad
$\alpha_p$	Angle of refracted waves	rad

SYMBOL	DEFINITION	UNITS
$\alpha_{bg}$	Breaker wave angle relative to global coordinate system	rad
$\alpha_{sg}$	Shoreline angle relative to global coordinate system	rad
$\Gamma$	Gamma function	--
$\gamma$	Peak enhancement factor in JONSWAP spectrum	--
$\gamma$	Euler's constant (0.5722)	--
$\gamma$	Statistical distribution parameter	--
$\Delta p$	Pressure change across fetch	mb
$\Delta Q_i$	Change in volumetric longshore transport rate	$m^3/sec$
$\Delta t$	Time step	sec
$\Delta x$	Cross shore displacement of profile m	m
$\Delta y$	Reach length	m
$\varepsilon$	Cumulative probability parameter	m
$\zeta$	Constant in longshore current profile	--
$\eta$	Displacement of free surface relative to the still water level	m
$\Theta$	Wave phase function	rad
$\Theta$	Angle in directional spectrum	rad
$<$	Predominate angle of directional spectrum	rad
$\theta$	Cumulative probability parameter	m
$\kappa$	Breaker index ( $H_b/d_b$ )	--
$\xi$	Surf similarity parameter	--
$\pi$	Constant 3.14159	--
$\rho$	Density of water	$kg/m^3$
$\rho_a$	Density of air	$kg/m^3$
$\rho_{fw}$	Density of fresh water	$kg/m^3$
$\rho_s$	Density of sediment	$kg/m^3$
$\sigma$	Numerical constant in JONSWAP spectrum	--
$\sigma$	Statistical distribution parameter	m
$\Phi$	Depth function in TMA spectrum	--
$\Phi_n$	Phase of wave n	rad
$\phi$	Phi scale for grain size	--
$\omega$	Circular wave frequency	$rad/sec$
$\omega_d$	Coefficient in TMA spectrum	--